9-39.   Koy is inflating a spherical balloon for her brother's
         birthday party. She has used three full breaths so far
         and her balloon is only half the width she needs.
         Assuming that she puts the same amount of air into the
         balloon with each breath, how many more breaths does
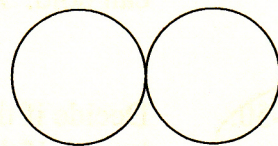   she need to finish the task? Explain how you know.

9-40.   Draw a cylinder on your paper. Assume the radius
         of the cylinder is 6 inches and the height is 9 inches.

   a.   What is the surface area of the cylinder? What
         is the volume?

   b.   If the cylinder is enlarged with a linear scale factor of 3, what is the volume of
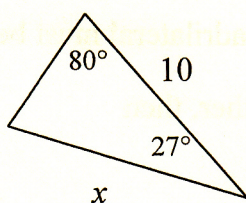   the enlarged cylinder? How do you know?

9-41.   While Katarina was practicing her figure skating, she
         wondered how far she had traveled. She was skating a
         "figure 8," which means she starts between two circles and
         then travels on the boundary of each circle, completing the
         shape of an "8." If both circles have a radius of 5 feet, how
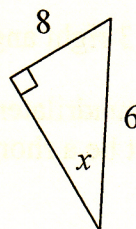   far does she travel when skating one "figure 8"?

9-42.   For each triangle below, solve for x, if possible. If no solution is possible, explain
         why.

   a.   b.   8   c.
         80°   10   6   x
            27°   6   30°
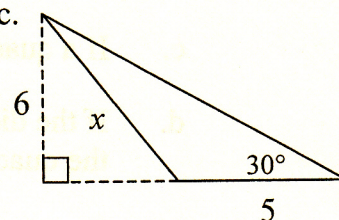   x   x   5
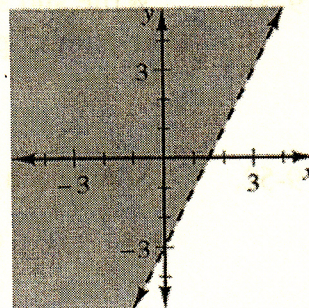
9-43.   The graph of the inequality $y > 2x - 3$ is shown at
         right. On graph paper, graph the inequality $y \leq 2x - 3$.
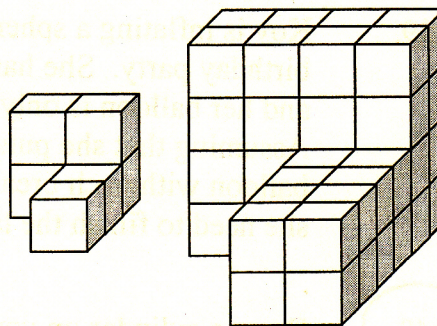   Explain what you changed about the graph.

9-44.   **Multiple Choice:** The point $A(-2, 5)$ is rotated 90°
         counter-clockwise (↺). What are the new coordinates
         of point A?

   a.   (2, 5)   b.   (5, -2)   c.   (2, -5)   d.   (-5, -2)
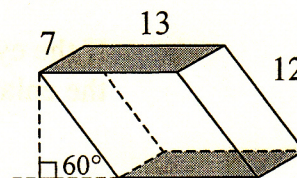
9-48. Consider the two similar solids at right.

    a. What is the linear scale factor?

    b. Find the surface area of each solid. What is the ratio of the surface areas? How is this ratio related to the linear scale factor?

    c. Now find the volumes of each solid. How are the volumes related? Compare this to the linear scale factor and record your observations.

9-49. Elliot has a modern fish tank that is in the shape of an oblique prism, shown at right. If the slant of the prism makes a 60° angle, find the volume of water the tank can hold. Assume all measurements are in inches.
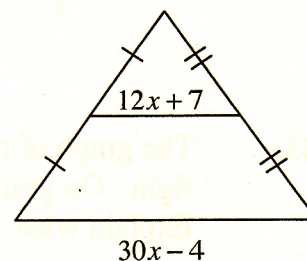
9-50. Decide if the following statements are true or false. If they are true, explain how you know. If they are false, provide a counterexample.

    a. If a quadrilateral has two sides that are parallel and two sides that are congruent, then the quadrilateral must be a parallelogram.

    b. If the interior angles of a polygon add up to 360°, then the polygon must be a quadrilateral.

    c. If a quadrilateral has 3 right angles, then the quadrilateral must be a rectangle.

    d. If the diagonals of a quadrilateral bisect each other, then the quadrilateral must be a rhombus.

9-51. Write and solve an equation based on the geometric relationship shown at right.

$12x+7$

$30x-4$

9-52. Solve each equation below. Check your solution.

    a. $20-6(5+2x)=10-2x$

    b. $2x^2-9x-5=0$

    c. $\frac{3}{5x-1}=\frac{1}{x+1}$

    d. $|2x-1|=5$

Geometry Connections